UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,552	12/31/2001	Lars Richter	8235-002	4667

30166 7590 07/10/2003

WOMBLE CARLYLE SANDRIDGE & RICE PLLC
300 N. GREENE STREET
SUITE 1900
GREENSBORO, NC 27401

EXAMINER	
COURSON, TANIA C	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,552	RICHTER, LARS	
	Examiner	Art Unit	
	Tania C. Courson	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner. OA MARCH 2002 (FIGS. 1, 1A & 3-5)

10)☒ The drawing(s) filed on *31 December 2001 (Fig.2) &* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5, 10-11 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kayama et al (JP 01147314 A).

Kayama et al. disclose in Figures 1-4, an angle measuring instrument and associated method comprising:

With respect to claim 1:

a) a casing (Fig. 1, body 1), a battery positioned in said casing (Fig. 1), a gyroscope positioned in said casing and electrically connected to said battery (Fig. 2, gyro 5), said gyroscope capable of measuring acceleration/deceleration velocity and generating an output signal (entire abstract), and a microprocessor positioned in said casing and electrically connected to said battery and said gyroscope for receiving said output signal (entire abstract), said microprocessor adapted to

calculate an angular displacement value using said output signal and a predetermined time factor (entire abstract and Fig. 4),

With respect to claim 2:

a) a reset button (Fig. 1, reset button 4) on said casing and electrically connected to said microprocessor for selectably resetting a reference point to zero (entire abstract), whereby a calculation using a subsequent output signal yields an angular displacement value offset from said reset reference point (entire abstract).

With respect to claim 3:

a) said casing includes a generally square-shaped configuration having bottom and top walls with side walls extending therebetween (Fig. 1), means for displaying said angular displacement value in degrees offset from a reference point (Fig. 1, display part 3), said means for displaying including an electronic display mounted on said top wall and electrically connected to said microprocessor for displaying said angular displacement value (Fig. 1).

With respect to claim 5:

a) wherein said gyroscope is a fiber optic gyroscope in which counter-propagating light beams traveling through an optical coil yield a time difference proportional to a degree of angular rotation of said optical coil, said output signal including data indicative of said time difference (Fig. 2, optical fiber gyro 5).

With respect to claim 10:

a) a casing having bottom and top walls with side walls extending therebetween, said casing defining an interior space (Fig. 1, body 1), a battery positioned in said interior space of said casing (Fig. 1), a gyroscope positioned in said interior space and electrically connected to said battery (Fig. 2, gyro 5), said gyroscope capable of measuring acceleration/deceleration velocity and generating a corresponding analog output signal (entire abstract), said output signal being indicative of a voltage proportional to a corresponding angular velocity, a microprocessor positioned in said casing and electrically connected to said battery and said gyroscope for receiving said output signal (entire abstract), said microprocessor adapted to calculate an angular displacement value using said output signal received over a predetermined period of time (entire abstract), a button mounted on said casing and electrically connected to said microprocessor for selectably setting a reference point (Fig. 1, reset button 4) and means in said microprocessor for converting said angular displacement value to a number of degrees offset from said reference point (Fig. 4).

With respect to claim 11:

a) an electronic display electrically connected to said microprocessor for displaying said converted angular displacement value (Fig. 1, display part 3).

With respect to method claim 18: The method steps claimed will be met during the normal operation of the apparatus stated above.

3. Claims 1, 3 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Albrecht (US 6,354,011 B1).

Albrecht discloses in the Figure, an orientation measuring instrument comprising:

With respect to claim 1:

a) a casing (housing 10), a battery positioned in said casing (the Figure), a gyroscope positioned in said casing and electrically connected to said battery (gyroscope g), said gyroscope capable of measuring acceleration/deceleration velocity and generating an output signal (the Figure), and a microprocessor positioned in said casing and electrically connected to said battery and said gyroscope for receiving said output signal (the Figure), said microprocessor adapted to calculate an angular displacement value using said output signal and a predetermined time factor (display 30).

With respect to claim 3:

a) said casing includes a generally square-shaped configuration having bottom and top walls with side walls extending therebetween (the Figure), means for displaying said angular displacement value in degrees offset from a reference point (display 30), said means for displaying including an electronic display

mounted on said top wall and electrically connected to said microprocessor for displaying said angular displacement value (the Figure).

With respect to claim 8:

a) a laser module (laser 36) positioned in said casing and electrically connected to said battery (the Figure), said laser module adapted to selectably emit a laser beam through an aperture defined by one side wall of said casing, said laser beam being emitted along an imaginary axis corresponding to an angular orientation of said casing (the Figure).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayama et al. in view of Moeller et al. (US 5,331,404), Thomas et al. (US 5,150,104), Albrecht and Prior Art (Applicant's Specification, page 1, lines 9-11).

Kayama et al. disclose an angle measuring instrument, as stated above in paragraph 2.

Kayama et al. do not disclose a means for filtering an output signal, whereby to remove

undesired electronic noise and unintended angular movements caused by human vibrations, a sound generator, wherein said microprocessor includes a memory for selectively storing at least one angular displacement value calculated by said microprocessor; and wherein a microprocessor is adapted to energize said sound generator when a subsequently calculated angular displacement value equals a respective stored angular displacement value, a laser module positioned in said casing and electrically connected to said battery, said laser module adapted to selectably emit a laser beam through an aperture defined by one side wall of said casing, said laser beam being emitted along an imaginary axis corresponding to an angular orientation of said casing, means for visually indicating an inclination of said casing with respect to the Earth's surface,

Moeller et al. teach a gyroscope system that consists of a means for filtering an output signal, whereby to remove undesired electronic noise and unintended angular movements caused by human vibrations (Fig. 5, subtractor 38). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the angle measuring instrument of Kayama et al., so as to include a subtractor, as taught by Moeller et al., in order to reduce excess noise on the system.

Thomas et al. teach a gyroscope indicator device that consists of a sound generator wherein a microprocessor is adapted to energize said sound generator when a subsequently calculated angular displacement value equals a respective stored angular displacement value (Fig. 3, speaker 14). Therefore, it would have been obvious to one having ordinary skill in the

art at the time the invention was made to further modify the angle measuring instrument of Kayama et al., so as to include a sound generator, as taught by Thomas et al., in order to increase the detection of angular displacement by providing an audio signal.

Albrecht teaches an orientation measuring instrument that consists of including a memory for selectively storing at least one angular displacement value (memory button 40), a laser module positioned in a casing and electrically connected to a battery, said laser module adapted to selectably emit a laser beam through an aperture defined by one side wall of said casing, said laser beam being emitted along an imaginary axis corresponding to an angular orientation of said casing (laser 36). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the angle measuring instrument of Kayama et al., so as to include a memory and a laser, as taught by Albrecht, in order to provide a means for recording angular displacement values and in order to provide a means for additional leveling features.

The Prior Art teaches a means for visually indicating an inclination of said casing with respect to the Earth's surface (applicant's specification, page 1, lines 9-11). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the angle measuring instrument of Kayama et al., so as to include a means for visually indicating an inclination, as taught by the Prior Art, in order to provide a routinely used means for determining if a surface is horizontal relative to the Earth's surface.

With respect to method claims 19-20: The method steps claimed will be met during the normal operation of the apparatus stated above.

6. Claims 4,6,7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht in view of Nakamura (US 5,375,336), Moeller et al., Thomas et al., and Prior Art (Applicant's Specification, page 1, lines 9-11).

Albrecht discloses an orientation measuring instrument, as stated above in paragraph 3.

Albrecht does not disclose wherein a gyroscope is a microelectromachined (MEM) gyroscope in which said output signal is a voltage proportional to a corresponding angular inertia velocity, a means for filtering said output signal, whereby to remove undesired electronic noise and unintended angular movements caused by human vibrations, a memory electrically connected to a microprocessor for selectively storing at least one angular displacement value calculated by said microprocessor, a sound generator wherein said microprocessor is adapted to energize said sound generator when a subsequently calculated angular displacement value equals a respective stored angular displacement value and a means for visually indicating an inclination of said casing with respect to the Earth's surface.

Nakamura teaches a gyro instrument that consists of wherein a gyroscope is a microelectromachined (MEM) gyroscope in which said output signal is a voltage proportional to a corresponding angular inertia velocity (Fig. 1, gyro-compass 10 with piezoelectric elements 16a-c). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the orientation measuring instrument of Albrecht, so as

to replace Albrecht's gyroscope g with the microelectromachined gyroscope, as taught by Nakamura, because both are well known alternate types of gyroscopes which will perform the same function, if one is replaced with the other, of measuring angular displacement.

Moeller et al. teach a gyroscope system that consists of a means for filtering an output signal, whereby to remove undesired electronic noise and unintended angular movements caused by human vibrations (Fig. 5, subtractor 38). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the orientation measuring instrument of Albrecht, so as to include a subtractor, as taught by Moeller et al., in order to reduce excess noise on the system.

Thomas et al. teach a gyroscope indicator device that consists of a sound generator wherein a microprocessor is adapted to energize said sound generator when a subsequently calculated angular displacement value equals a respective stored angular displacement value (Fig. 3, speaker 14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the orientation measuring instrument of Albrecht, so as to include a sound generator, as taught by Thomas et al., in order to increase the detection of angular displacement by providing an audio signal.

The Prior Art teaches a means for visually indicating an inclination of said casing with respect to the Earth's surface (applicant's specification, page 1, lines 9-11). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

further modify the orientation measuring instrument of Albrecht, so as to include a means for visually indicating an inclination, as taught by the Prior Art, in order to provide a routinely used means for determining if a surface is horizontal relative to the Earth's surface.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art cited on PTO-892 and not mentioned above disclose angular measuring instruments:

Kayama et al. (JP-62293790)

Murata (JP-09072742)

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tania C. Courson whose telephone number is (703) 305-3031. The examiner can normally be reached on Monday-Friday from 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached on (703) 308-3875. The fax number for this Organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DIEGO F.F. GUTIERREZ
SUPERVISORY PATENT EXAMINER
GROUP ART UNIT 2859

TCC
June 27, 2003